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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,363	10/25/2000	Swam S. Kalsi	05770-146001	4609

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EXAMINER

MULLINS, BURTON S

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 07/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/696,363

Applicant(s)

KALSI

Examiner

Burton S. Mullins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31 is/are allowed.
- 6) ☒ Claim(s) 1,2,8,11-13,25-28,30,32 and 33 is/are rejected.
- 7) ☒ Claim(s) 3-7,9,10,14-24 and 29 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-2, 8, 12-13, 27-28, 30 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sterrett et al. (US 4,039,870) in view of Lloyd (US 5,066,638). Sterrett teaches a superconducting rotor comprising: a superconducting field winding 32 (Fig.1); a field winding support comprising dewar vessel 38 concentrically arranged on the superconductor field winding (Fig.1; c.3, lines 32-35); and a thermal reserve comprising a radiation shield 42 concentrically arranged on the field winding support 38 (Fig.1; c.3, lines 35-38). The thermal reserve 42 is configured to absorb heat from the field winding since the reserve "prevent[s] thermal conduction from the exterior of the dewar vessel 38 to the interior thereof" (c.3, lines 36-38) so that conversely, any heat generated by the winding 32 in the interior of the dewar vessel would not be conducted to the exterior.

Sterrett differs in that the superconductor winding 32 is not a "high temperature" superconductor, per se; neither does Sterrett teach that the thermal reserve 42 functions to "maintain a temperature differential between the thermal reserve and the field winding not greater than about 10 K."

Regarding the former feature, Lloyd teaches a high-temperature superconducting rotor. The benefits of high-temperature superconductors include improved efficiency through reduced winding losses and eddy current losses (c.1, lines 9-23).

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It would have been obvious to one having ordinary skill in the art to provide a high-temperature superconductor winding per Lloyd for the superconducting winding of Fritz since the high temperature superconductor would have been desirable to reduce winding and eddy current losses and improve efficiency.

Regarding the latter feature, this recitation has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35 USC 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. In re Fuller, 1929 C.D. 172; 388 OG 279. While Sterrett does not explicitly state a temperature differential of 10 degrees K, this would have been obvious to one of ordinary skill because one can infer that in order to keep Sterrett's interior superconductor windings and liquid helium coolant at approximately 4 degrees K (c.3, line 42) and minimize heat transfer (c.3, lines 35-37 & 47-48), the differential would desirably be as low as possible. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA 1250, 156 F.2d 239, 70 USPQ 412. Further, the particular range of less than 10 degrees K claimed by applicant does not appear to produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art, since Sterrett also teaches minimization of temperature differential. In re Dreyfus, 22 CCPA 830, 73 F.2d 931, 24 USPQ 52.

Regarding claim 2, the choice of materials for Sterrett's thermal reserve 42 includes thermally conductive materials such as metals, e.g. aluminum or steel (c.4, line 65-c.5, line 1).

Regarding claim 8, aluminum and steel are electrically conductive.

Regarding claims 12-13, note banding about thermal reserve 42 in Sterrett comprising eddy current damper shield 60 of electrically conductive material (Figs.1-2; c.4, lines 20-34).

Regarding claims 32-33, Sterrett's thermal reserve 42 contacts the winding support 42.

Regarding claim 27, the method is inherent in Sterrett and Lloyd because all the elements are taught by the combination and because the operation of the combination would be the same as applicant's since the temperature differential would desirably be as low as possible per Sterrett. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA 1250, 156 F.2d 239, 70 USPQ 412. Further, the particular range of less than 10 degrees K claimed by applicant does not appear to produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art, since Sterrett also teaches minimization of temperature differential. In re Dreyfus, 22 CCPA 830, 73 F.2d 931, 24 USPQ 52.

Regarding claim 28, the choice of materials for Sterrett's thermal reserve 42 includes thermally conductive materials such as metals, e.g. aluminum or steel (c.4, line 65-c.5, line 1).

Regarding claim 30, outer cylinder 60 functions as an eddy current damper shield (c.4, lines 20-34).

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sterrett and Lloyd as applied to claim 8 above, and further in view of Kullmann (US 4,063,122). Sterrett

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and Lloyd generally teach applicant's structure but do not specify that the electrically conductive thermal reserve is shrunk fit over the field winding support.

Kullmann teaches a superconductive rotor including a method of shrink fitting an outer cylinder 6 onto a superconducting support body 5 (c.4, lines 15-17) in order to obtain a friction connection between the parts.

It would have been obvious to one having ordinary skill in the art to modify Sterrett and Lloyd and shrink fit the thermal reserve onto the support winding per Kullmann since this would have been desirable to obtain a friction connection between the parts.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 25-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 25-26 of U.S. Patent No. 6,140,719.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 25 of the '719 patent recites a thermal reserve which maintains a

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temperature differential of “about 10 [degrees] K” between the thermal reserve and the field winding. The application’s claim 25 recites a thermal reserve which maintains a temperature differential “not greater than about 10 [degrees] K”. The differential temperature of “about 10 K” recited in the ‘719 patent thus falls within the range claimed in the application.

Response to Arguments

6. Applicant’s arguments with respect to claims 1-33 have been considered but are moot in view of the new grounds of rejection.

Allowable Subject Matter

7. Claims 3-7, 9-10, 14-24, 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding claim 3, Sterrett’s thermal reserve 42 comprises electrically conductive materials such as metals, e.g. aluminum or steel (c.4, line 65-c.5, line 1). Regarding claims 9-10 and 14, Sterrett’s thermal reserve material does not include segmentation, either in a direction normal to the rotor axis or parallel to the rotor axis. Regarding claim 15, Sterrett’s banding 60 is electrically conductive, not electrically non-conductive. Regarding claim 18, Sterrett’s eddy current damper shield 60 of electrically conductive material such as copper and bronze comprises a thermally conductive material. (Figs.1-2; c.4, lines 20-34). Regarding claim 29, Sterrett does not teach a thermally nonconductive material about the thermally conductive material.

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8. Claim 31 is allowed. The prior art does not teach or suggest a thermal reserve including ATTA which is thermally conductive and electrically nonconductive. Sterrett's thermal reserve 42 comprises electrically conductive materials.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kirtley et al. teaches a cylindrical shield 6 serving as a damper and radiation shield to protect and thermally isolate the cold parts around superconductor winding 1 (Figs.1-2).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.


Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
July 15, 2003